

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 36-59 remain in the application. Claims 1-19 have previously been canceled and replaced by new claims 36-59 to clarify and sharpen the focus on the differences between the invention and the prior art, and overcome the rejections. In particular, the new claims recited the effectiveness according to the invention of erythritol and/or xylitol as plasticizing agent during the baking process while making possible the achievement of previously unavailable, unexpected, and unobvious properties. Here, the independent claims 36, 46, and 51 are further amended for purpose of clarification only.

Basis for these amendments is found in earlier claims and in the specification at page 1, line 14, to page 5, line 2.

Concurrently with this paper, there is being submitted a Declaration in accordance with 37 CFR 1.132 by Dr. Karl Tiefenbacher, who is one of the present inventors and an expert in the commercial scale production of baked goods such as those described in the present specification, explaining and attesting to the role of plasticizing agents in appropriate proportions according to the invention.

As stated in the specification at page 8, line 3, to page 9, line 2, page 16, lines 4-20 and in the working examples, and claimed in independent claims 36, 46, and 51, the present invention provides a baking mixture such as batter or dough for baking particular kinds of non-perishable baked goods made from flours and/or starches in major proportion and having certain combinations of physical properties that those skilled in the art were not previously able to achieve.

The particular non-perishable baked goods under consideration are those that are shaped in a plastic condition when still hot from the baking process or when reheated to return to plastic condition, for example by a wrapping, rolling, pressing, stamping, embossing, bending, folding or deep drawing operation to afford the desired crispy-brittle shaped product. Successful accomplishment of each of these operations, in turn, has hitherto required the use of baking mixtures from a limited range of compositions. Baking mixtures of other compositions are unsuitable for commercial manufacture, wasteful in operation, or fail entirely to produce the desired result.

The manufacture of the particular baked goods under consideration proceeds in three steps:

- (a) first, a baking step produces a baked substantially planar intermediate product capable of being reshaped while hot and not very stable in form
- (b) next, the intermediate product is mechanically reshaped into a different three-dimensional form
- (c) finally, the reshaped intermediate is cooled so that it retains its new shape while giving up its plastic reshapability and solidifies to a crispy-brittle baked product.

Hitherto, such processes have worked only with baking mixtures having a particularly high content of sugar, because only the finely dispersed molten sugar resulting from the baking step plasticizes the baked product to impart the essential ability to be reshaped in the second step. This ability to be reshaped is absent without the high content of finely dispersed molten sugar in the baked product. This high sugar content represents a plasticizing agent activated by the heat of the baking process and effective only while hot, so that on cooling the mechanically reshaped intermediate the plasticizing effect disappears as the finely dispersed molten sugar solidifies to a glass or crystallizes and the product is fixed in its desired new shape.

Several disadvantages are associated with the use of unshaped baking mixtures with high sugar content as plasticizing agent for the baked product resulting from the baking process.

With baking mixtures with only a few per cent sugar content, there is the danger that the resulting baked product is very sticky at the end of the baking process and hence does not completely detach from the baking surfaces when the mold is opened, so that the baked product adhering to the baking surfaces is damaged upon opening the mold.

In the usual baking molds for wafers, in which flat wafer sheets, wafer cones, flat or deep wafer cups, and flat or deep wafer plates receive their final shapes, there are therefore used only sugar-free baking mixtures.

Even with a very low sugar content in the baking mixture it is necessary to use a special anti-adhesion stratum on the baking surfaces in order to assure that the baked product of the baking process adhering to the baking surfaces of the mold detaches and is not distorted or even destroyed.

With the appreciably higher sugar content in the baking mixture that affords a plasticizing agent when hot, the baked

intermediate made from this mixture is very sticky on top and on the bottom. It must therefore be mechanically removed from the baking surface on which it was made and to which it adheres strongly. Hence production of such sticky baked products is only possible in special baking machines, in which the baking surfaces on which the sticky baked products have been made are freely accessible after the baking operation to flat mechanically acting take-off knives etc.

The particular non-perishable baked goods specified above are therefore produced in specialized baking machines from baking mixtures having a very high sugar content effective as plasticizing agent when hot, such as individual flat wafer sheets or continuous flat wafer belts, to be shaped or mechanically reshaped after baking while in a warm, plastic condition by wrapping, rolling, pressing, stamping, embossing, bending, folding or deep drawing to afford mini-rolls, cones, flat or deep plates, flat or deep cups etc..

The products of mechanically reshaping wafer sheets and wafer belts in a warm plastic condition are allowed to cool to room temperature in their new 3-dimensional shape to eliminate the plasticizing effect of the finely dispersed sugar and the reshapability of the goods, and allow the latter to solidify to a crispy-brittle structure that retains its shape.

35 U.S.C. § 112

Claims 36-59 have been rejected under 35 U.S.C. § 112, first paragraph for not teaching what is encompassed by the phrase "with the proviso that sugar is not the only plasticizing agent." The claims have been amended to overcome the rejection by substituting for this language the recitation in claim 36 of

a plasticizing agent selected from the group consisting of erythritol, xylitol, mixtures of erythritol and xylitol, mixtures of erythritol and sugar, mixtures of xylitol and sugar, and mixtures of erythritol, xylitol, and sugar

and analogous language in claims 46 and 51.

35 U.S.C. § 103

Claims 36-59 have been rejected as being unpatentable over Kim and Kondo.

The rejection acknowledges that the claims differ as to the specific type of baked product and the amounts used, and that Kim discloses a product that becomes soft quickly. The rejection, however, fails to acknowledge that nothing in Kondo helps one skilled in the art not knowing the present invention to surmount Kim's acknowledged deficiencies.

The rejection is respectfully traversed, for failing to consider the invention as a whole and to consider the cited

art as a whole. Those skilled in the art not having knowledge of the present invention clearly have no basis for abstracting certain bits of disclosure from one reference and other bits of disclosure from the other reference where significant aspects of the references contradict one another. Those skilled in the art not having knowledge of the present invention also have no basis to arrive at elements of the invention not taught by either reference.

Kim teaches the replacement of sweetener sugar by a similarly sweet sweetener xylitol in baked goods limited to less than 10% by weight of digestible carbohydrate (for diabetics) and intended to have otherwise identical properties, such as appearance, volume, texture, sweetness, and consistency, as the analogous baked products for non-diabetics, including, as taught by Kim, a slightly elastic non-brittle consistency, different from the present invention.

Kondo teaches use of erythritol as sweetener in cakes made from yeast-leavened dough, which one skilled in the art recognizes as a springy, non-brittle pastry, different from the present invention.

Thus, neither Kim nor Kondo nor any combination of these teach or suggest a product containing an effective plasticizing

amount of erythritol and/or xylitol to provide a baked product capable of being mechanically shaped while warm and also being crispy-brittle at room temperature. Such a product is contrary to the specific teachings of both Kim and Kondo.

The physical properties of the claimed product, differing from Kim's disclosure, include in particular a plastic state at an elevated temperature that facilitates processing, and a crispy and brittle texture at ambient temperature. No baking mixture or resulting baked product having these properties are disclosed by Kim. The Examiner acknowledges this, noting that "Kim discloses that the product becomes soft quickly."

It is respectfully pointed out that a product that does not remain crispy until it reaches the consumer after the time required to pass through the customary commercial distribution channels is not a crispy product and hence is not the claimed product.

Kondo discloses a mixture of saccharides composed of 25-75 wt. % meso-erythritol and 75-25% wt. % at least one saccharide selected from sugar and sugar alcohol other than meso-erythritol used as edulcorant in a kneaded powder cake.



The present invention requires the claimed bakery mixtures to have the property of being deformable in a heated plastic state to provide resulting baked products having the desired shapes. No such deformable baking mixture or resulting baked product having been shaped while hot are taught or suggested by Kim or by Kondo or any combination of these references.

Thus, the ability of erythritol and xylitol to afford a baking mixture and resulting baked product that can be shaped while hot and retain its shape in a crispy-brittle condition after cooling is an unexpected and useful property. The importance of recognizing the unobviousness of unexpected and useful properties in compositions of matter has been settled law since 1963, see In Re Papesch, 315F.2d 381, 137 USPQ 43 (CCPA 1963) "enthusiastically reaffirmed" by the Court in 1995, In Re Dillon, 919 F.2d 688 16 USPQ2d 1897 (Fed.Cir. 1990). A further totally unexpected property and consumer benefit of the product of the present invention is the greater plasticizing efficiency of erythritol and xylitol compared to sugar. This enables the producer to reduce the level of sweetness, opening the way to products with a neutral taste (see claim 57). Kim and Kondo use xylitol and erythritol to replace sugar because they taste sweet. Note in this connection Kim's statement that

the caloric value of lactitol amounts only to maximally half of that of saccharose so that in

diabetic products this sugar alcohol is preferred to sorbitol and xylitol both having the same caloric value as saccharose.

Having the same caloric value as saccharose (sugar), xylitol might be expected to provide approximately equal sweetness. A totally unexpected property of xylitol and erythritol in bakery products, not taught or suggested by either Kim or Kondo but discovered by the present inventors, is their great efficiency as plasticizers in facilitating the elevated temperature processing of the products at a greatly reduced use level, such that one part by weight of these polyols can replace 2-3 parts by weight of sugar (see specification at page 15 lines 18-25).

The rejection acknowledges that the claims differ as to the specific type of baked product and the amounts used, but states that "Kim discloses all bakery products (see claim 1), where bakery products would include wafers."

In taking this position, the rejection overlooks the fact that Kim only discloses all bakery products, including wafers, having Kim's disclosed composition, in which digestible carbohydrate (i.e. flour, and starch) is limited to 10% by weight maximum and sugar is zero. Here, it remains indisputable that Kim provides no disclosure, teaching, or suggestion of any bakery product having the property required

according to the present invention of being deformable in a heated plastic state. Kondo likewise provides no such disclosure, teaching or suggestion. Hence one skilled in the art on the priority date of this invention seeking knowledge of a baking mixture and resulting bakery product having the property of being deformable in a heated plastic state finds no assistance in Kim, in Kondo, or in both references considered together.

Since neither Kim nor Kondo disclose, teach, or suggest a baking mixture or resulting product with the property of being deformable in a heated plastic state of the baked product, the finding that this property is only achieved with certain polyols, and not with other polyols, is clearly an unexpected result.

Kim explicitly discloses that sorbitol and xylitol used in the disclosed composition failed to give crispy products, while Kondo is devoid of disclosure of any crispy product. Kim also discloses a crispy product containing lactitol, which is a sugar alcohol with twelve carbon atoms and ten hydroxyl groups.

Accordingly, the ability to obtain a crispy product with xylitol according to the invention is directly contrary to the

teaching of Kim and thus clearly an unexpected result. The ability to obtain a crispy product with erythritol is also unexpected, because like xylitol, which constituted a failure for Kim, and unlike Kim's successful lactitol, erythritol has a hydroxyl group on each carbon atom, and even fewer carbon atoms (4). One skilled in the art aware of Kim would most likely expect erythritol to fail in Kim's composition.

It should also be noted that the diminished level of sweetness is also an unobvious feature of the invention, not taught by Kim or Kondo or their combination. On the contrary, Kim emphasizes the sweet taste of the preferred lactitol ingredient, while Kondo characterizes the disclosed saccharide mixture as "edulcorant" (= sweetener) to achieve "a feeling of quality as well as using wholly cane sugar" (i.e. a product of similar sweetness).

Among the dependent claims, the Examiner's attention is respectfully directed to claim 57, dependent upon claim 51 by way of claim 53 and defining a baked product according to the invention having a neutral taste. Nothing in Kim, in Kondo, or in any combination of these references provides even the slightest hint of such a product.

The rejection again seeks support in *In re Boesch*, *In re Kerkhoven* and *In re Gershon* for the contention that "the claims are drawn to a combination of known components which produces expected results." On the contrary, it is respectfully submitted that the claims are drawn to a novel combination that produces unexpected results, as detailed above.

The Examiner's attention is respectfully called to an earlier amendment for an analysis of the cited cases and an explanation how the claimed invention differs significantly from the facts considered by the Court in rejecting the claims presented in each of these cases. That analysis and explanation are believed to be fully applicable to the present claims, and the Examiner is respectfully urged to consider it as if here reiterated verbatim.

As explained above, it is respectfully submitted that claims 36-59 define patentable subject matter and are in order for prompt allowance, which is respectfully solicited.

In the first paragraph on page 2 of the Office communication dated February 18, 2005, the Examiner stated that the reply filed on December 1, 2004 is not fully responsive to the Office action dated September 3, 2004, as it failed to

specifically point out portions of the original disclosure which support the amendment.

Basis for "63.8 percent by weight" is provided by Formula 8 in Example 1, page 22. That formula is disclosed as having 100 parts by weight of flour in a total weight of 156.7 parts of all ingredients except water, thus containing  $100/156.7 = 63.8\%$  flour and/or starch. Note also the statement on page 20, lines 7-8, that all parts are by weight. This means that all calculated percentages are percent by weight.

Moreover, 63.8% by weight is the smallest percentage of flour and/or starch in any of the formulas in the Working Examples that illustrate the invention, thus providing basis for 63.8% as a lower limit.

As previously pointed out at page 8 first paragraph of the amendment filed in response to the Office action dated October 3, 2003, and here reaffirmed.

"In the interest of concluding prosecution, however, the claims have been amended to further clarify that "made from flours and/or starches" means that flours and/or starches are present in a proportion of at least 63.8% by weight excluding water, as shown by the formulas in the Working Examples that illustrate the invention, where the lowest proportion of flour and/or starch, in formula 8 of Example 1, is calculated as 63.82% by weight of all ingredients except water. Formulas 1 and 41 which show a lower percent (59.2%) of flour/starch are comparative examples not illustrating the invention."

For disclosure of the specific combinations of plasticizing agents, the Examiner's attention is respectfully directed to original claims 6 and 8 and the specification on page 9, line 1 to page 10, line 8.

Thus original claim 6 specified, in pertinent part  
"A baking mixture ... comprising, in weight percent of the total quantity of flour and starch,

70-150% of water,

0-67% of a sugar,

and an effective plasticizing amount of at least one aliphatic polyol having four to five carbon atoms and an alcoholic hydroxyl group linked to each carbon atom.", while original claim 8 specified "The baking mixture of claim 6, wherein said aliphatic polyol is selected from the group consisting of erythritol and xylitol."

Thus original claim 6 discloses the use of a single aliphatic polyol having 4-5 carbon atoms and a hydroxyl group on each carbon atom, as well as two or more such polyols, in an effective plasticizing amount, in a baking mixture also comprising 0-67% sugar, in other words without any sugar or with sugar in an amount up to 67%. Claim 8 further limits

claim 6 to mixtures in which the polyol is erythritol, xylitol, or a combination of these polyols.

The Examiner's attention is also respectfully directed to the Working Examples, and particularly the tables on pages 22, 24, 26, 28, 30, and 32, where the formulas identified below illustrate baking mixtures comprising each of the following plasticizing agents and combinations of plasticizing agents:

Erythritol only: example 1, formulas 5, 7, 8; example 3, formulas 20, 22, 23, 24; example 5, formulas 35, 36, 39, 40; example 6, formulas 43,44, 47, 48.

Xylitol only: example 2, formulas 13, 15, 16; example 4, formulas 28, 29, 30, 31, 32; example 5, formulas 37, 38; example 6, formulas 45, 46.

Erythritol plus xylitol: example 1, formula 6; example 2, formula 14; example 3, formula 21.

Erythritol plus sugar: example 1, formulas 2, 3, 4; example 3, formulas 18, 19; example 5, formula 34; example 6, formula 42.

Xylitol plus sugar: example 2, formulas 10, 11, 12; example 4, formulas 26, 27.



Erythritol plus xylitol plus sugar: example 2, formula 9.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested, as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



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